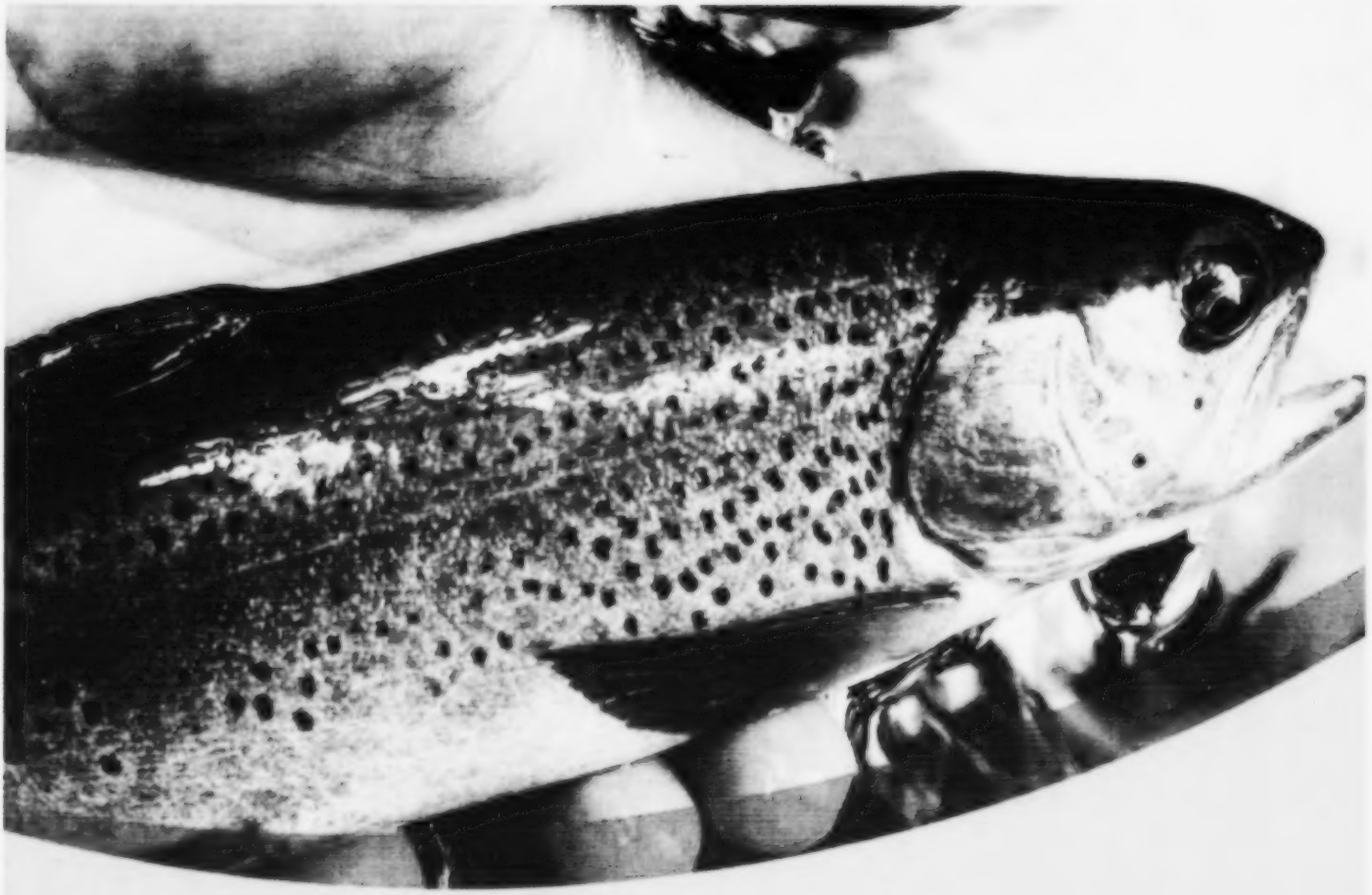

New Brunswick Rainbow Trout Aquaculture Policy

New Nouveau Brunswick CANADA

Department of Natural Resources
Department of Agriculture and Aquaculture

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1.0 New Brunswick Rainbow Trout Aquaculture Policy

1.1 Overview

Rainbow trout *Oncorhynchus mykiss* is a native fish of the Eastern Pacific and the freshwater west of the Rocky Mountains. Rainbow trout were first introduced into New Brunswick in 1899 and have established self-sustaining (naturalized) populations in two sub-watersheds within the Inner Bay of Fundy Recreational Fishery Area (Dick's Lake and the Shepody River system). Rainbow trout have also been cultured and stocked in private ponds within the Saint John River watershed for several decades. Escapement has occurred but assessment has been inadequate to determine the status of self-sustaining populations.

The culture of rainbow trout, like other aquaculture activities, requires an Aquaculture License from the Department of Agriculture and Aquaculture (DAA) as per Sections 4 and 6 of the *Aquaculture Act*.

1.2 Requirement for Policy

This Policy resulted from a review of the 1993 New Brunswick Policy Statement on Rainbow Trout. This Policy describes a process to mitigate risk to wild stocks and simultaneously supports the development of rainbow trout aquaculture for New Brunswick.

Rainbow trout are recognized by the New Brunswick aquaculture industry as a viable species for culture. At the same time it has been documented that the establishment of rainbow trout in the wild has the potential to negatively impact native Atlantic salmon and brook trout stocks.

1.3 Policy Statement and Objectives

Policy Statement

Rainbow trout may be reared in private and commercial aquaculture operations in New Brunswick subject to terms and conditions which will minimize the risk or threat to native fish stocks.

Policy Objectives

1. Support/facilitate the continuation of private and commercial rainbow trout aquaculture operations in New Brunswick.
2. Protect the wild fish stocks of New Brunswick from further introduction of rainbow trout into their habitats.

By:

- Establishing acceptable operational requirements for the aquaculture industry regarding the private and commercial culture of rainbow trout, designed to minimize potential negative effects on native fish stocks, without unduly impeding the private aquaculture sector.
- Providing a standardized inter-departmental mechanism for the review of rainbow trout culture license applications under the direction of DAA;
- Respecting federal and provincial acts, regulations, and policies related to conservation and aquaculture activities;
- Establishing rainbow trout culture zones for New Brunswick.

1.4 Scope and Application

This policy applies only to aspects of private and commercial aquaculture rearing of rainbow trout.

This policy does not apply to rainbow trout research activities.

This policy does not apply to stocking or enhancement of public waters.

2.0 Definitions

2.1 All-female stocks

The production of stocks which are all females. Populations which do not contain male rainbow trout.

2.2 Aquaculture

The cultivating of aquatic plants and animals but does not include cultivation of aquatic plants and animals in a laboratory for experimental purposes or in an aquarium.

2.3 Aquaculture Site

A site, specified in an aquaculture license, at which aquaculture is to be carried on, is carried on or was carried on.

2.4 Aquatic Organisms

All organisms including finfish, mollusks, crustaceans, echinoderms, and other invertebrates and their lifestages defined as "***Fish***" in the *Fisheries Act* (Canada) as well as marine and freshwater plants.

2.5 Commercial Aquaculture Licence

A class of aquaculture license that permits a licensee to conduct aquaculture for commercial gain.

2.6 Contained System

Rearing system that meets the criteria outlined in "Containment Standards for Land-based Rainbow Trout Aquaculture Facilities" to prevent the escapement of rainbow trout. (See Appendix. B).

2.7 Fish-Out Ponds

A fish rearing facility constructed for the culture or stocking of fish for the purposes of fishing.

2.8 Grow-Out

The production and rearing of rainbow trout from a fingerling size (approximately 5g) to a market size.

2.9 Hatchery

A landbased facility which raises trout from the egg stage to a post first feeding size (approximately 5g).

2.10 Naturalized Species

Introduced species that have become established and have formed self-sustaining populations.

2.11 Non-Indigenous Species

Species not originating or occurring naturally in a particular environment, or introduced outside its native or natural range.

2.12 Private Aquaculture License

A class of aquaculture license that authorizes the licensee to carry on aquaculture for private use and not for commercial gain.

2.13 Rainbow Trout Culture Zone

Geographical divisions of the province, based on major watershed drainages, governing the culture of rainbow trout.

2.14 Registrar of Aquaculture

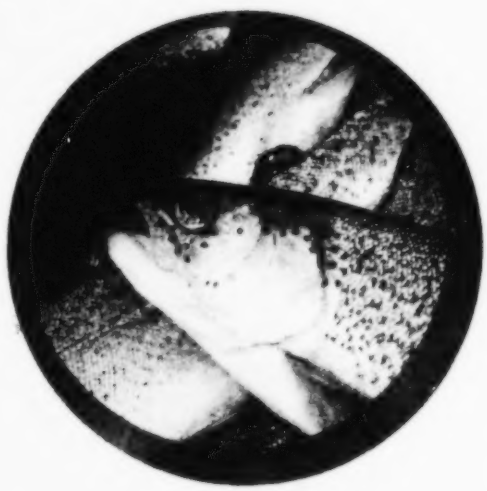
An employee appointed by the Minister of Department of Agriculture and Aquaculture as Registrar of Aquaculture, under the *Aquaculture Act*.

2.15 Sterile

Not able to reproduce young or incapable of producing offspring. For the purposes of this Policy document, sterile stocks means triploid stocks.

2.16 Triploid

Having three sets of chromosomes and are considered sterile. Triploid rainbow trout are considered sterile after testing shows triploidy at the 95% confidence level by a recognized method and laboratory.



3.0 Procedures for Licensing Rainbow Trout Aquaculture Facilities

3.1 Administrative Roles and Responsibilities

3.1.1 Applications for New and Renewed Licenses:

Licenses

- Proponents seeking a private or commercial rainbow trout aquaculture license must submit an application to the Registrar of Aquaculture, DAA as per Section 6 of the *Aquaculture Act*.
- License application forms and guides are available at all DAA offices.
- Issuance of a rainbow trout private or commercial aquaculture license in no way conveys responsibility or liability to the Province of New Brunswick. The licensee assumes all responsibility and liability for the operation of the facility as prescribed in the conditions of the license. This policy does not exclude any other responsibilities or liabilities under other Acts, regulations or policies.
- Upon receipt of the license application or initial inquiry, the DAA will complete an initial site visit with the proponent.

3.1.2 Other Approvals

Aquaculture operations must satisfy all Federal and Provincial legislation, and obtain all other required permits or licences in addition to their aquaculture license, including, but not limited to:

- Watercourse Alteration Permit, Groundwater Source Permit, Approval to Construct and Approval to Operate from Department of Environment (DOE)
- New Brunswick Introduction and Transfer Licence pursuant to Section 56 of the *Fishery (General) Regulation* - Federal Fishery Act - a requirement for operations that introduce or transfer fish within or into New Brunswick.
- Federal and Provincial fish health regulations must be adhered to:
  - *Import Permit, Department of Fisheries and Oceans Canada (DFO)*
  - *Inland Movement Testing (DAA)*
  - *Stocks being moved from other areas must be free of Whirling Disease or other Diseases of Concern as determined by Department of Natural Resources (DNR) and DAA*

3.1.3 Containment Assessments

- Containment requirements for specific Rainbow Trout Culture Zones have been established based on the level of risk associated with the type of activity. (see Appendix B: Containment Standards for Land-based Rainbow Trout Aquaculture Facilities)
- The proponent must complete all parts of the rainbow trout licence application.

3.1.4 Terms and Conditions

- The Registrar of Aquaculture is responsible on behalf of the Province of New Brunswick for including in the licence, the approved Terms and Conditions upon which a private or commercial rainbow trout aquaculture licence shall be issued.

3.2 Rainbow Trout Culture Zones

For the purpose of rainbow trout aquaculture, the province is divided into three zones based on potential ecosystem risks, and respecting neighboring jurisdictions that share common watersheds. Activities approved by zone are based on historical use and ecological risks.

The activities approved in each zone are as follows:

3.2.1 Zone 1
Bay of Fundy drainage (excluding Upper Saint John River)

Rainbow trout have been introduced and/or have become naturalized. (historical area for culture of rainbow trout)

- Private and commercial rainbow trout aquaculture facilities licensed for land-based operations must comply with containment systems noted under Appendix B: Containment Standards for Land-based Rainbow Trout Aquaculture Facilities.
- Cage Culture – Sea and tidal estuary only – triploids only.
- If land-based commercial operations have a direct outlet to a brook, stream or open water, approved containment will be required.
- If private and commercial fish-out ponds have a direct outlet to a brook, stream or open water, approved containment will be required.
- Broodstock facilities will be considered on a case by case basis. Triploids or all female stocks only are permitted in all other operations.

3.2.2 Zone 2
Northumberland Strait and Bay of Chaleur

Rainbow trout are considered an exotic, non-indigenous species, with little to no previous culture occurring.

- Commercial rainbow trout aquaculture licenses approved for land-based operations must comply with containment systems noted under Appendix B: Containment Standards for Land-based Rainbow Trout Aquaculture Facilities. Application of the containment requirements in this zone will essentially prevent any escapement.
- Minimum commercial size for grow-out operations is 30 metric tonnes.
- Minimum commercial size for hatchery operations is 100,000 fingerlings to a size of 5g.
- Experimental trials, evaluating stocks or projects within the context of a larger commercial development of 30 metric tonnes or greater, will be permitted as long as all containment conditions are met.
- No cage culture permitted for rainbow trout.
- No new commercial fish-out ponds permitted for rainbow trout.
- Five previously licensed commercial rainbow trout operations will be re-licensed for triploid stocks only. None of these licences will be transferable to a new owner.
- No private licenses for rainbow trout.
- Only triploid stocks permitted.
- Movements of live fish will only be permitted from a hatchery operation.
- No broodstock facilities will be permitted.
- Phase out existing licence holders who do not meet the above mentioned criteria.

3.2.3 Zone 3
Upper Saint John River bordering Maine

Commercial rainbow trout aquaculture has been permitted:

- Private and commercial rainbow trout aquaculture licenses approved for land-based operations must comply with containment systems noted under Appendix B: Containment Standards for Land-based Rainbow Trout Aquaculture Facilities.
- If land-based commercial operations have a direct outlet to a brook, stream or open water, approved containment will be required.
- If private and commercial fish-out ponds have a direct outlet to a brook, stream or open water, approved containment will be required.
- Broodstock facilities will be considered on a case by case basis. Triploids or all female stocks only are permitted in all other operations.

3.3 Compliance

- Protocols on inspection criteria will be jointly determined by the DAA and the DNR.
- Scheduled inspection of all licensed rainbow trout aquaculture facilities, will be the responsibility of the DAA.
- As part of the final license approval process all rainbow trout facilities will be inspected by DAA staff. Other government agencies will be invited to attend these inspections as well.
- Enforcement and compliance lies with the DAA by authority of the *Aquaculture Act*.
- Should either department become aware of activities of alleged non-compliance or complaints, each respective department will ensure the other department is informed as per inter-departmental agreement on protocols.
- The DAA will provide the Fish and Wildlife Branch of DNR with information on any follow up action taken regarding compliance and enforcement where legally permissible.

3.4 Existing Activities

All existing rainbow trout activities upon the commencement of this Policy will have six months to be compliant with respect to containment standards and must comply immediately with all female or triploid status as appropriate when new stocks are placed on the site. A determination regarding the issuance of a rainbow trout licence will be made on a case-by-case basis, based on conformity to this Policy. Those operators not able to comply with this Policy, will have no more than **24 months** to phase out the operation or grow out existing stocks to market size. All existing facilities will be inspected within six months of this Policy becoming effective to ensure compliance with the new Policy.

3.5 Modifications to the Policy

Modifications or exceptions to this Policy will only occur when the Ministers of Agriculture and Aquaculture, and Natural Resources are confident those modifications or exceptions support trout aquaculture development and protect wild fish stocks in the province and that all containment conditions are met. An inter-departmental mechanism will be established to ensure such recommendations or decisions are supported by both departments. A formal review of the Policy will be completed in 2012.

4.0 Conformity with other Legislation and Policies

- The New Brunswick Rainbow Trout Aquaculture Policy is not a substitute for existing legislation, or licence requirements under the federal *Fishery (General) Regulations*.
- The New Brunswick Introductions and Transfers Committee has committed to adopt the Policy as its official protocol for providing guidance relating to applications involving movements of rainbow trout.

5.0 Authorities

5.1 Departmental Authority

- *New Brunswick Aquaculture Act 1988 and Regulation 91-158*
- *New Brunswick Fish and Wildlife Act and Regulation 82-103*

5.2 Other Applicable Acts, Regulations and Policies

- *New Brunswick Clean Environment Act and Regulation 87-83*
- A Wildlife Policy for New Brunswick 1995 – Wildlife Populations and Values and Uses of Wildlife
- Bay of Fundy Marine Aquaculture Site Allocation Policy
- *Federal Fisheries Act* – Maritime Provinces Fisheries Regulations
- Fish Health Protection Regulations
- National Code for Introduction and Transfers of Aquatic Organisms

6.0 Policy Inquiries

6.1 Department of Agriculture and Aquaculture

- Inquires concerning this policy may be directed to the Regional Aquaculture Leasing and Licencing Officer at the following Regional offices of the DAA:

St. George Regional Office
Tel: (506) 755-4000
Fax: (506) 755-4001

Shippagan Regional Office
Tel: (506) 336-3751
Fax: (506) 336-3057

Bouctouche Regional Office
Tel: (506) 743-7330
Fax: (506) 743-7229

- Inquiries specific to any enforcement action to be taken in respect of this policy may be directed to the Manager of Enforcement, Corporate Services Branch. Tel: (506) 453-2792.

6.2 Department of Natural Resources

DNR staff may direct inquiries:

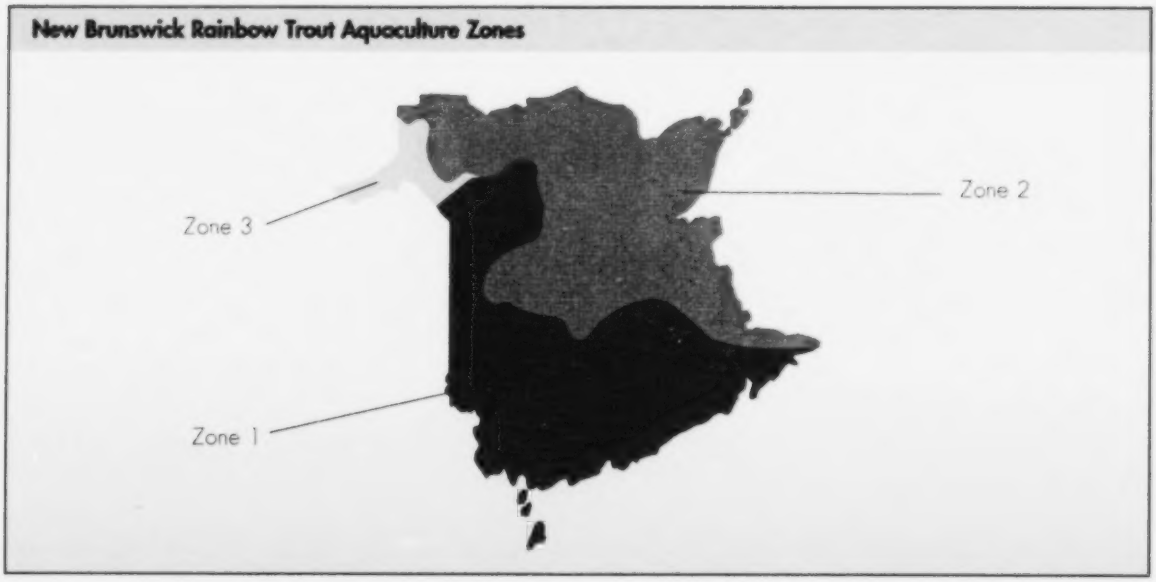
- Concerning this Policy, including inquiries specific to the issuance and administration of rainbow trout licences to the Director of the Fish and Wildlife Branch. Tel: (506) 453-2440.
- Specific to any enforcement action to be taken in respect of this policy to the Manager of Enforcement, Regional Support Services Branch. Tel: (506) 453-2488.

7.0 Appendices

A: Map of Rainbow Trout Culture Zones

B: Containment Standards for Land-based Rainbow Trout Aquaculture Facilities

A. Map of Rainbow Trout Culture Zones



B. Containment standards for Land-Based Rainbow Trout Aquaculture Facilities April 2007

1. Goal

The goal of the standards presented here is to protect wild fisheries resources without unduly impeding the development of a rainbow trout aquaculture industry.

2. Standards

Each proposal will be reviewed on a case-by-case basis and that, in cases where containment of the fish is warranted, the following standards must be adhered to in establishing containment procedures for rainbow trout aquaculture facilities.

2.1 The facility must be a land-based facility.

2.2 The facility cannot be located within the floodplain of a river. Please refer to the New Brunswick Department of Environment, Science and Planning Division.

2.3 Rearing units must be constructed and plumbed in such a way, and with materials, that minimizes the possibility of structural failure and fish escapement.

2.4 Any facility using surface water will be required to adequately screen the rearing unit inlet or have sufficient head-drop to prevent fish passage at all water levels. (See: Design and Maintenance Standards for Screening Structures and Containment)

2.5 All effluent should be concentrated into one outlet.

2.6 Requirements for all Rainbow Trout Aquaculture Zones:

- *Each rearing unit outlet must be screened according to the size of fish as outlined in Table 1 or Table 2.*
- *Final effluent discharged to another body of water must pass through a triple screen system prior to release from the facility.*
- *In addition, all hatchery effluent must pass through a triple screen system prior to being reused or discharged to another body of water.*

2.7 Additional Containment Requirements for Zone 2:

- *Perimeter of the facility must have 1.8m high fencing and have a locked gated entrance unless the facility is enclosed within a building.*
- *Control of access to the facility will be the responsibility of the proponent.*
- *The Aquaculture Licence application must include a detailed development plan providing all aspects of design and construction. Information on equipment used for containment must also be provided.*
- *A contingency plan must be submitted with the Aquaculture Licence application which indicates the course of action in the event of a tank failure or system failure to ensure all rainbow trout are contained to the site.*
- *In addition to the triple screen system, all water discharged must be screened through a filter equivalent to 1000 micron (1 mm) for a hatchery and 3000 micron (3 mm) for a grow out operation.*
- *A back-up system must be in place in the event there are failures of the primary screening system.*

2.8 Recommended Facility Types for Zone 2:

- *Recirculation Culture Systems: An enclosed culture system where the rearing water is contained within the system making multiple passes through the rearing tanks. Effluent from the rearing tanks is treated and pumped back to the rearing tanks. A small percentage of the total recirculating flow (5-20%) leaves the system as waste effluent water. Effluent water is filtered to remove particulate and living organisms. Waste from the filtration must be disposed of in an approved manner as authorized by Department of Environment.*
- *Reuse Culture System: A rearing facility where water is reused until un-ionized ammonia becomes limiting.*

3. Definitions

- Commercial aquaculture licence (Zone 1 & 3)

  Is a class of aquaculture licence that permits a licensee to conduct aquaculture for commercial gain.

- Commercial aquaculture licence (Zone 2)

  Is a class of aquaculture licence that permits a licensee to conduct aquaculture for commercial gain where the production is intended for the table market and the annual production exceeds 30 metric tonnes unless the production is intended to supply fingerlings to a grow out facility. Commercial hatchery operations must have a minimum capacity of 100,000 5g fingerlings.

- Drum, Disk or Triangle Filter

  A self-cleaning mechanical filter using a mesh to screen out solids particles from the water. Screening/mesh size can vary from 1000 microns to 3000 microns, dependent upon the size of trout reared.

- Fish-out pond

  A fish rearing facility constructed for the culture or stocking of fish for the purposes of fishing.

- Grow Out Facility

  The production and rearing of rainbow trout from fingerling size (approximately 5g) to a market size.

- Hatcheries (Zone 1 & 3)

  A fish-rearing system constructed to hold fertile broodstock and for the culture of all female ova, fry and fingerlings unless selected individuals are kept as future broodstock.

- Hatcheries (Zone 2)

  A fish-rearing system constructed with proper containment for the culture of triploid ova, fry and fingerlings with a minimum capacity of 100,000 5g fish.

- Triple Screen System

  A rectangular/square-shaped structure made of rigid material with three removable screens, which are placed perpendicularly to the water flow preventing any fish from escaping the facility. (See Table 1 and Table 2 for screen opening).

Design and Maintenance Standards for
Screening Structures and Containment

a) Standards

1. Perforated aluminium or stainless steel material is required. Material such as chicken wire and plastic mesh are not suitable, as they are difficult to clean, easily damaged and unable to withstand winter conditions.
2. Grow out facilities will use 16-gauge thickness screening for large mesh screens and hatcheries use 18-20 gauge screening for small mesh screens.
3. Screens must be made up of panels mounted on metal or rigid frame.
4. The screen panel must fit snugly in the guides so that spaces larger than the clear opening in the mesh do not occur.
5. The screen shall be cleared of debris on a daily basis.

b) Inlet for Rearing Units Where Upstream Fish Passage is Possible

1. One set of double slot guides positioned side by side must be provided.
2. A screen must be permanently installed perpendicularly to the water flow.
3. Water levels must not exceed more than half the screen height.
4. To accommodate maintenance operations, a spare screen is required.
5. The spare screen is then slipped into the spare slots while the first panel is removed for maintenance.
6. Where pipes are used, flattened and expanded metal screens must be moulded over the pipe and secured with a metal clamp.

c) Outlet for Final Effluent Discharge

triple screen system

1. Screens must be made up of panels mounted on metal or rigid frame.
2. Three sets of double slot guides positioned side by side must be provided.
3. Three screens are continuously installed perpendicular to the water flow.
4. Water level must not exceed more than half the screen height.
5. To accommodate maintenance operations, a spare screen is required.
6. The spare screen is then slipped into the spare slots while the first panel is removed for maintenance.
7. For purpose of maintenance, screens may be removed one screen at a time for cleaning and immediately replaced.

d) Mechanical Filtration System for Zone 2

- The filter must be constructed from materials commonly used by manufacturers.
- Filter frames must be stainless steel or equivalent.
- Filter housing should be stainless steel or reinforced food grade plastic.
- Must have a self-cleaning system and be plumbed in such a manner to allow diversion of effluent to a backup system for maintenance or failure.
- Screens must be replaceable or easily repaired.
- Screens must not be greater than 1000 micron for hatchery facilities and 3000 microns for grow out facilities.

e) Individual Rearing Unit Screening

1. Each individual rearing unit outlet (i.e. tank, raceway) must have screening of sufficient size according to the size of the fish outlined in Table 1 and Table 2.

Screening Requirements for Rainbow Trout Culture

Table 1: Standard horizontal oblong screen slots.

Fish Weight	Fish Length		Slot size	
(g)	cm	inches	width (mm)	length (mm)
0 - 0.45	0 - 3.8	0 - 1 1/2	1.6	3.2
0.45 - 2.3	3.8 - 6.4	1 1/2 - 2 1/2	3.2	6.4
2.3 – 15	6.4 - 11.4	2 1/2 - 4 1/2	6.4	12.7
> 15	11.4	4 1/2	12.7	19.1

Reference: Fish Hatchery Management, U.S. Fish and Wildlife Service

The oblong slot length must be placed horizontally

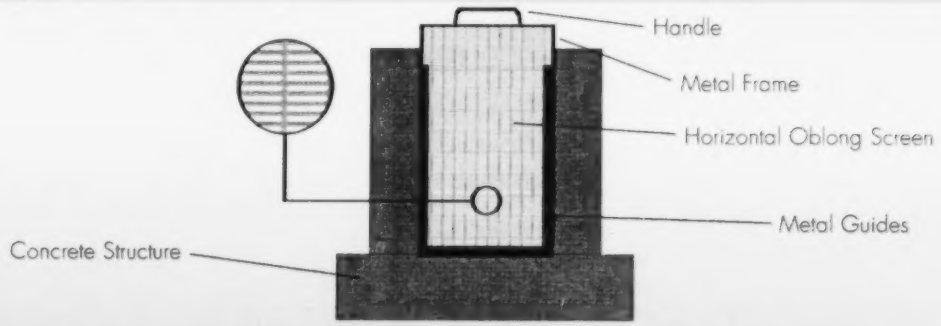
Table 2. Standard round screen openings

Fish Length		Fish Weight		Required Screen Spacing	
mm	inches	grams	ounces	mm	inches
51	2	1.5	.05	5	3/16
76	3	5	.17	10	3/8
127	5	28	1	13	1/2
203	8	114	4	19	3/4
305	12	284	10	25	1
381	15	681	24	35	1 3/8

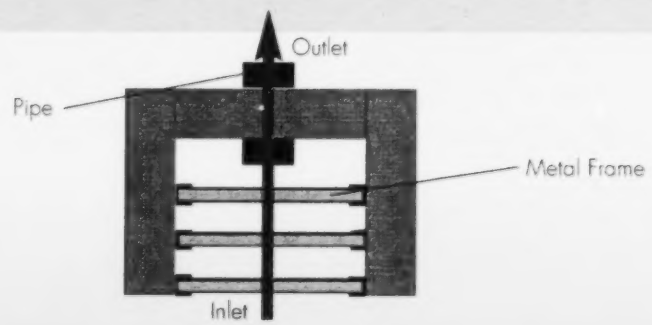
Reference: Alberta Agriculture, Food and Rural Development, Aquaculture Section

Triple Screen System Structure

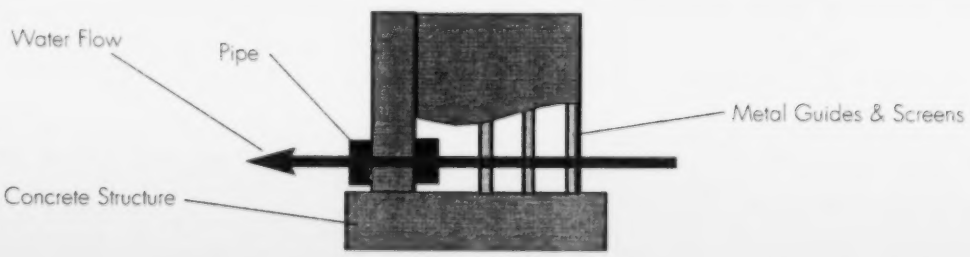
Front View



Top View



Side View



Note: Wherever the screens may be installed, you have to make sure the screen panels fit snugly in the metal guides in order to prevent any fish escapement. Therefore, it is important to fix the metal guides on both sides and bottom of the concrete structure.